

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
November/December, 2023

04 DEC 2023

Level : B.E./B.Sc./B.Tech  
Year : I  
Time : 2 hrs. 30 mins.

Course : COMP 102  
Semester : I  
F. M. : 40

SECTION "B"

[6Q. × 4 = 24 marks]

Attempt *ANY SIX* questions

1. Write in brief about operator precedence and associativity. Discuss in brief assignment operator. [2+2]
2. Explain in brief about implementation of if-else ladder and switch statements. What could be advantages and disadvantages implementing one over another? Explain with appropriate syntax.
3. Explain in brief about Entry controlled loop and exit controlled loop with appropriate example.
4. Write a program to calculate an area of a triangle having closed edges of lengths a,b and c respectively. The program should take the edges as an input and display the area using formula,  $A = \sqrt{s(s-a)(s-b)(s-c)}$  where  $s = (a+b+c)/2$  till the user presses 'y' with (y/n) option, where y refers to continue calculating area of another triangle, while n refers to program termination.
5. Write a program to count the total number of prime numbers stored in an array using a function. The function takes an array as an input and returns the total number of prime numbers stored in it.
6. Write a recursive program to find the sum of n Fibonacci numbers, where n is user input. Explain every statement in a comment section within the line.
7. Write in brief about DMA function and its different types in C programming.

SECTION "C"

[2 Q. × 8 = 16 Marks]

Attempt *ANY TWO* questions

8. a. Discuss in brief about the components of functions. What is the purpose of a function declaration? [4]  
b. Write in brief about data types, variables and identifiers in C programming. [4]

9. a. Write in brief about storage class specifiers in c programming. [4]
- b. Write a program for matrix multiplication using a function. User inputs the number of rows and columns of two matrices and if matrix multiplication is possible it returns the resultant matrix. [4]
10. Write a program to store information about students which can hold name, roll no., marks of different subjects (int marks[5] ), and total marks (sum of all obtained marks). Write a function which can take information about the desired number of students in 5 subjects and another function to display information about the student having highest total marks.

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Marks Scored:

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Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date 04 DEC 2023

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Encircle the most appropriate answer.

- Which of the following is not a valid identifier in C programming?  
a. Auto                      b. &auto                      c. \_auto                      d. \_lauto
- Which of the following data types is used to declare a variable that can hold a real number?  
a. double                      b. int                      c. short int                      d. long
- If p is a pointer variable pointing to variable A. What will be the value of \*a?  
a. memory address of a                      b. value of a  
c. value of p                      d. value of &p
- If p is pointer variable which point to 3rd element of any array. What is operation of p+3?  
a. It hold memory address of second element of array.  
b. It hold memory address of third element of array.  
c. It hold value of addition value of the third element of array and 3.  
d. It hold memory address of 6th element of array.
- If a[]={3,5,5,6,7,3,4}; then \*a+1 returns \_\_\_\_\_.  
a. 4                      b. 5                      c. 3                      d. error
- What is output of following program?  
char \*ptr;  
char myString[] = "1234567";  
ptr = myString;  
ptr += 5;  
printf("%c", \*ptr);  
a. 5                      b. 6                      c. 4                      d. Generate error
- How many times will Hello be printed by given sections of statements?  
int x;  
for (x= -1 ; x<=10 ; x+=2)  
{  
if(x > 5)  
break;  
printf("Hello");  
}  
a. 0 times                      b. 5 times                      c. 3 times                      d. infinite times

8. Multipath decision making conditional statements cannot be implemented using \_\_\_\_.
- a. Switch                      b. if else                      c. nested if else                      d. else if ladder
9. If the break keyword is not used in switch case statements then, \_\_\_\_.
- a. It will work normally.                      b. It will only execute the default case.  
c. It will execute all cases.                      d. It will be an error.
10. The loop in which the statements within the loop are executed at least once is called \_\_\_\_.
- a. Entry controlled loop                      b. Exit controlled loop  
c. Middle controlled loop                      d. Recursion
11. Dynamic memory allocation helps to \_\_\_\_.
- a. Allocate memory during static linking  
b. Allocate memory during the compile time  
c. Allocate memory during both compile and run time  
d. Allocate memory during run time
12. If malloc cannot allocate memory, it returns \_\_\_\_.
- a. 0                      b. 1                      c. Null                      d. Garbage
13. What is the output of C program with multidimensional arrays?
- ```
int main()
{
int ary[][3] = {6,5,4,3,2,1};
printf("%d",ary[1][0]);
return 0;}

```
- a. 2                      b. 3                      c. 1                      d. Compiler error
14. Which of the following operators has the highest precedence?
- a. Arrow operator                      b. Dot operator  
c. Arithmetic operators                      d. Bitwise operators
15. What will the statement `print("%d",15>>2);` prints in the console?
- a. 60                      b. 3                      c. 1                      d. 0
16. Which of the following storage class specifiers has the longest lifetime in a program?
- a. Auto                      b. register                      c. static                      d. local
17. Which of the given structure declarations generate error?
- a. `struct{  
int a;  
}b{10};`                      b. `typedef struct{  
int a;  
}b;`                      c. `struct a{  
int a;  
};`                      d. `struct{  
int a;  
}b[];`

18. What is the purpose of function declaration?
- a. To give prior information about function name, and argument names.
  - b. To give prior information about the data type of return value and parameters involved.
  - c. To run the function appropriately.
  - d. To let the compiler know about the existence of the function.
19. Which of the following is defined under `stdlib.h`?
- a. Mathematical function
  - b. String Function
  - c. Standard library function
  - d. Conversions and memory allocation functions
20. Recursive function is applicable when a function \_\_\_\_\_
- a. Call itself again and again
  - b. Can be represented in its smaller form.
  - c. cannot solve the problem using a loop.
  - d. Needs more memory space.

